

GODERICH

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5
OFFICE OF THE GENERAL MANAGER

Members of the Goderich Local Advisory Committee,
Town of Goderich.

Gentlemen:

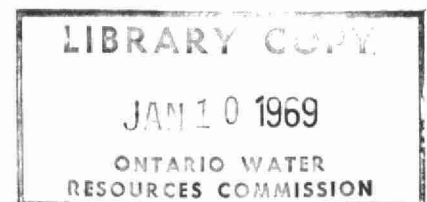
We are happy to present you with the 1967 Operating Summary for the
Goderich Water Treatment Plant, OWRC Project No. 6-0069-60.

Your co-operation with our staff throughout the year has been appreciated.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.





ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET
TORONTO 5

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CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

TELEPHONE 365-

D. S. CAVERLY
GENERAL MANAGER
W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Goderich Water Treatment Plant, OWRC Project No. 6-0069-60.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

C O N T E N T S

Foreword	1
Title Page	3
'67 Review	5
Project Costs	6
Operating Costs	8
Process Data	10
Conclusions	Inside back cover

GODERICH

water treatment plant

operated for

THE TOWN OF GODERICH

by

THE ONTARIO WATER RESOURCES COMMISSION

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Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: B. W. Hansler

801 Bay Street Toronto 5

'67 REVIEW

Plant flows decreased substantially in 1967. The average daily flow decreased from 0.741 million gallons in 1966 to 0.645 million gallons in 1967. A cool summer and an abundance of rainfall was probably responsible for the low water consumption in 1967. Average daily flows were at all times below the design capacity of 1.5 mgd.

The perennial problem of high raw water turbidities again presented itself in 1967, with peak turbidities being recorded in January, April, November and December. The treatment process, however, reduced the turbidities to about 0.70 ppm of silica units in the treated water.

OPERATING COSTS

The operating cost per thousand gallons of water treated increased over the previous year. This increase was due to both greater operating costs and lower water consumption.

PROJECT STAFF

The plant is supervised 24 hours per day, seven days per week with each man working an average of 40 hours a week. The permanent staff of five is supplemented by casual labour to allow for vacations, sick leave and heavy workload periods. A total of 5.6 men are required to give the plant full coverage with two men at the plant on the day shift only, five days of the week.

The staff maintained a clean, attractive and efficient plant for the Town of Goderich.

PROJECT COSTS

NET CAPITAL COST (Final):

Goderich Town.	\$708,196.02	
Deduct payments from municipality	<u>15,000.00</u>	\$693,196.02
Ontario Hospital	\$293,383.05	
Deduct payments from Ontario Hospital	<u>293,383.05</u>	-
Long Term Debt to OWRC		<u>\$693,196.02</u>

Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967:

Goderich Town	\$ 80,847.22	
Ontario Hospital	<u>-</u>	<u>\$ 80,847.22</u>

BILLINGS

The total cost to the municipality during 1967 was as follows:

Net Operating

Goderich Town	\$ 45,089.16	
Ontario Hospital	<u>2,403.11</u>	\$ 47,492.27

Debt Retirement

Goderich Town	\$ 13,988.00	
Ontario Hospital	<u>-</u>	\$ 13,988.00

Reserve

Goderich Town	\$ 5,316.87	
Ontario Hospital	<u>312.19</u>	\$ 5,629.06

Interest Charged

Goderich Town	\$ 39,091.69	
Ontario Hospital	<u>-</u>	\$ 39,091.69

TOTAL		<u>\$106,201.02</u>
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RESERVE ACCOUNT

	<u>Total</u>	<u>Ontario Hospital</u>	<u>Town of Goderich</u>
Balance at January 1, 1967	\$27,174.97	\$1,587.43	\$25,587.54
Add: Payments in 1967	<u>5,629.06</u>	<u>312.19</u>	<u>5,316.87</u>
	\$32,804.03	\$1,899.62	\$30,904.41
Add: Interest earned on Reserve Funds in 1967	<u>1,660.10</u>	<u>90.36</u>	<u>1,569.74</u>
Less Expenditures	<u>375.30</u>	<u>-</u>	<u>375.30</u>
Balance at December 31, 1967	<u><u>\$34,088.83</u></u>	<u><u>\$1,989.98</u></u>	<u><u>\$32,098.85</u></u>

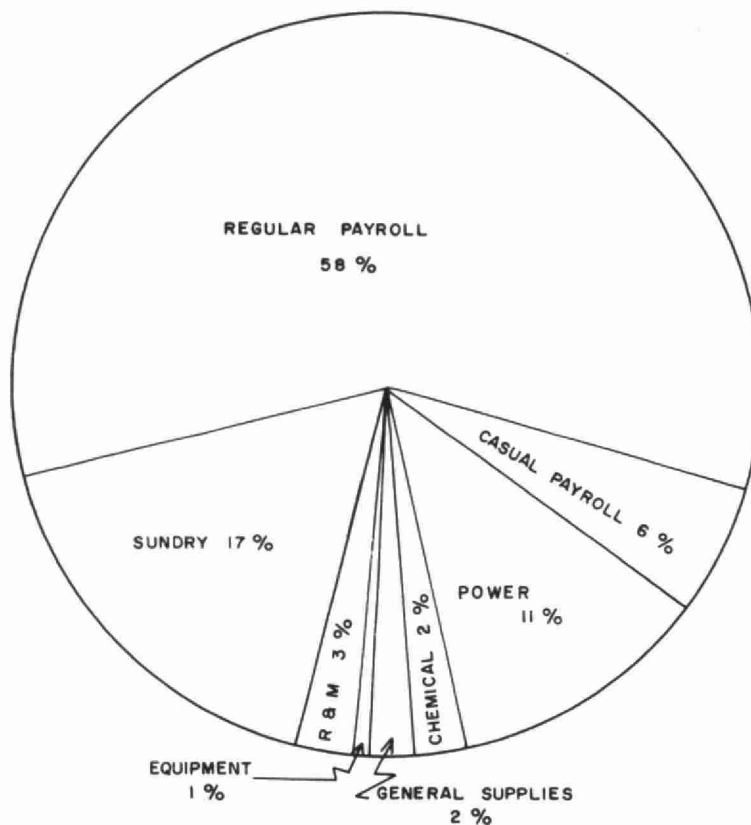
MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAY ROLL	CASUAL PAYROLL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY
JAN	2,758.95	1966.45	237.35	524.95		28.52		.64	1.00
FEB	3,297.35	2334.64	173.86	495.56	79.50	66.87		92.83	53.99
MARCH	4,349.16	3235.80	315.58	511.04		76.18		40.45	167.11
APRIL	2,761.58	2032.45	115.63	473.02		38.96	4.00		96.70
MAY	3,240.51	2260.34	162.05	431.06	198.75	50.49			127.00
JUNE	9,081.13	2086.36	97.10	391.80	625.63	117.32	143.89		6219.03
JULY	3,235.88	2111.12	395.74	495.88		66.87	91.09	4.57	70.62
AUG	3,252.21	2242.80	460.30	330.31		119.14			49.13
SEPT	4,500.76	3014.96	443.72	392.21		75.86		527.16	46.83
OCT	3,105.69	2151.71	156.75	399.21		116.60			281.42
NOV	3,910.48	2145.01	104.63	428.44	204.75	31.52			996.43
DEC	3,398.57	2154.16	52.11	477.44		77.83		521.75	115.28
TOTAL	47,482.27	27735.80	2705.58	5412.25	1108.63	876.20	238.97	1187.50	8225.34

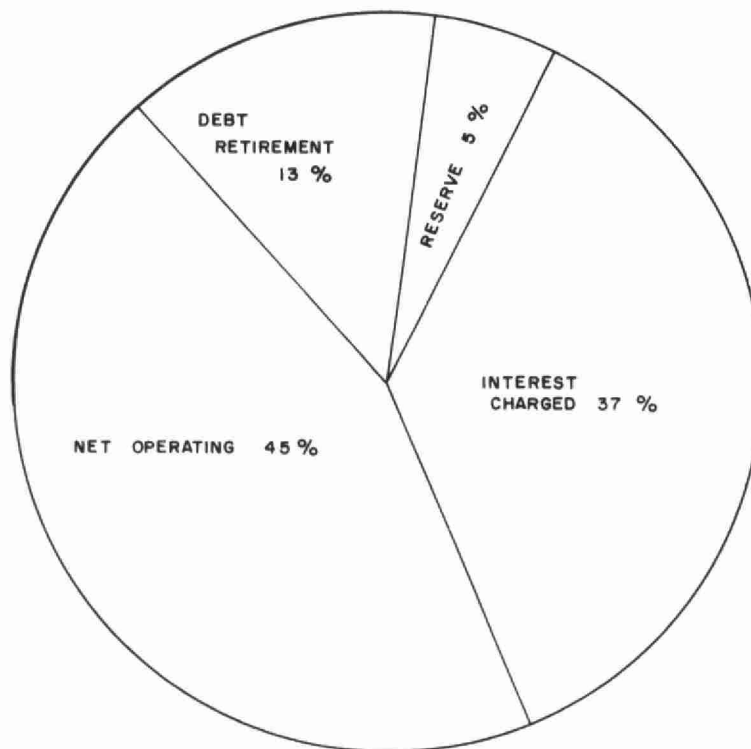
YEARLY OPERATING COSTS

YEAR	M.G.TREATED	TOTAL COST	COST PER THOUSAND GALLONS
1963	305,271	\$30,397	\$0.10
1964	293,962	\$36,979	\$0.13
1965	283,003	\$38,935	\$0.14
1966	270,556	\$44,799	\$0.17
1967	235,314	\$47,462	\$0.20

1967 OPERATING COSTS



TOTAL ANNUAL COST



Process Data

FLOWS

The decreased consumption over the past three years is clearly indicated in the Probability of Flows curves. The flows have decreased from an average of 0.775 mgd in 1965 to 0.645 mgd in 1967. The peak monthly averages have decreased gradually from 1963 to 1967 and substantially from 1966 to 1967 as shown in the Average Daily Demand curves. The peak monthly averages have decreased from 1.17 mgd in 1966 to 0.84 mgd in 1967.

TURBIDITIES

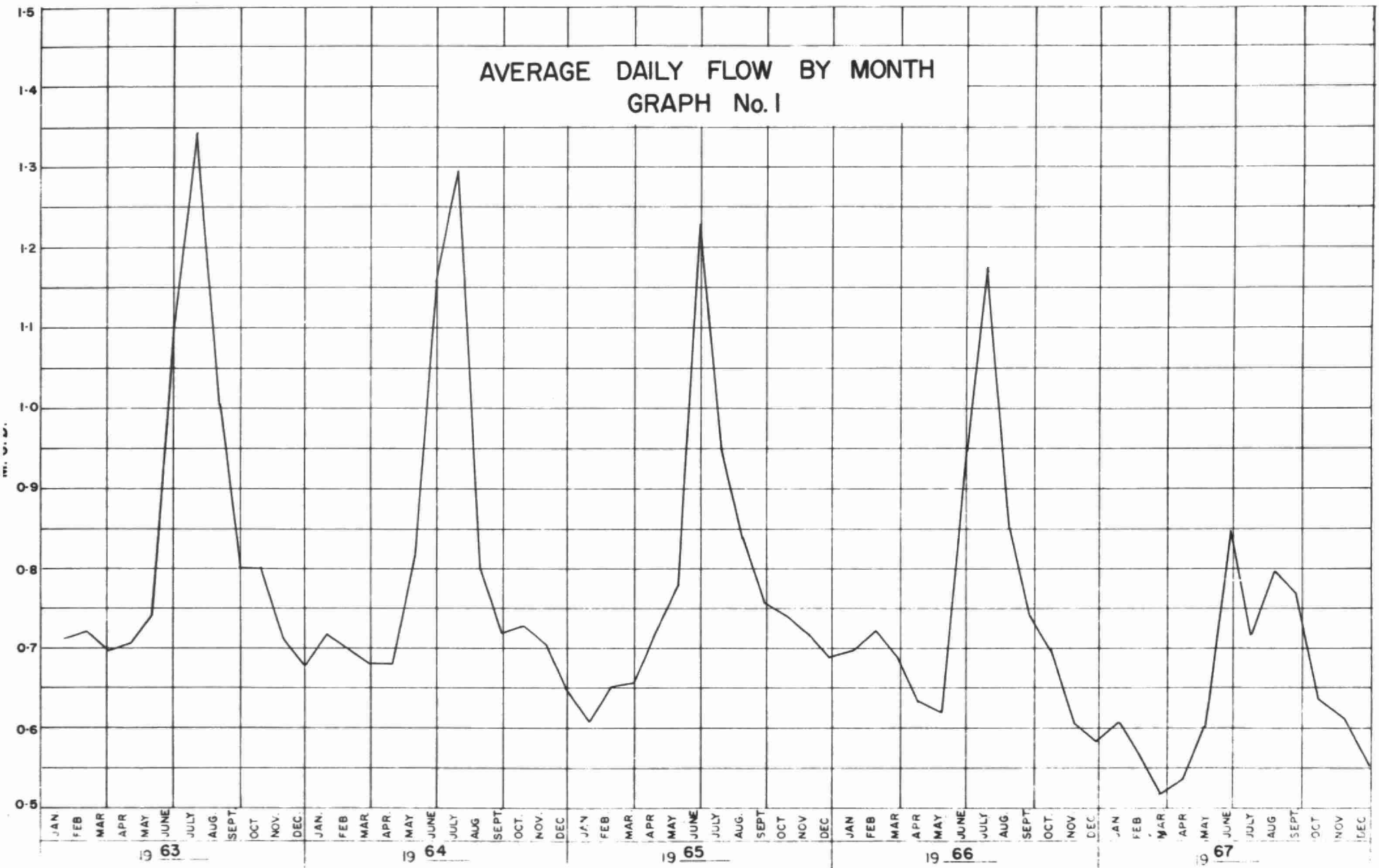
Turbidity in the raw water has increased considerably over the past two years with higher turbidities being sustained over longer periods of time in the winter and spring. This has resulted in an increased alum demand in order to obtain the same degree of treatment efficiency as obtained in previous years. The turbidity of the treated water varied from 1.0 to approximately 2.0 ppm of silica units.

Alum is generally not used when the turbidity of the raw water is below 7.0 ppm of silica units. In 1967 alum was required 68.5 percent of the time as shown in the probability of turbidity curves in graph No. 5 and only 54 percent of the time in 1966.

FLOW DATA

MONTH	TOTAL RAW FLOW MG	BACKWASH		PLANT OUTPUT MG	AVERAGE DAILY MG	MAXIMUM DAILY MG	MINIMUM DAILY MG
		TOTAL MG	% OF MG				
January	19.789	1.012	5.1	18.777	.606	.806	.436
February	16.689	.851	5.1	15.838	.566	.729	.420
March	16.606	.769	4.6	15.837	.511	.682	.405
April	16.927	.897	5.3	16.030	.534	.757	.408
May	19.866	1.058	5.3	18.808	.607	.824	.469
June	26.712	1.553	5.8	25.159	.839	1.333	.526
July	23.443	1.417	6.0	22.026	.711	.956	.552
August	25.879	1.267	4.9	24.612	.794	1.077	.621
September	23.850	.840	3.5	23.010	.767	1.027	.589
October	20.338	.700	3.4	19.638	.633	.727	.509
November	19.063	.680	3.6	18.383	.613	.723	.509
December	17.836	.640	3.6	17.196	.555	.700	.433
TOTAL	246.998	11.684	-	235.314	-	-	-
AVERAGE	20.583	-	4.7	19.609	0.645	-	-

AVERAGE DAILY FLOW BY MONTH
GRAPH No. 1



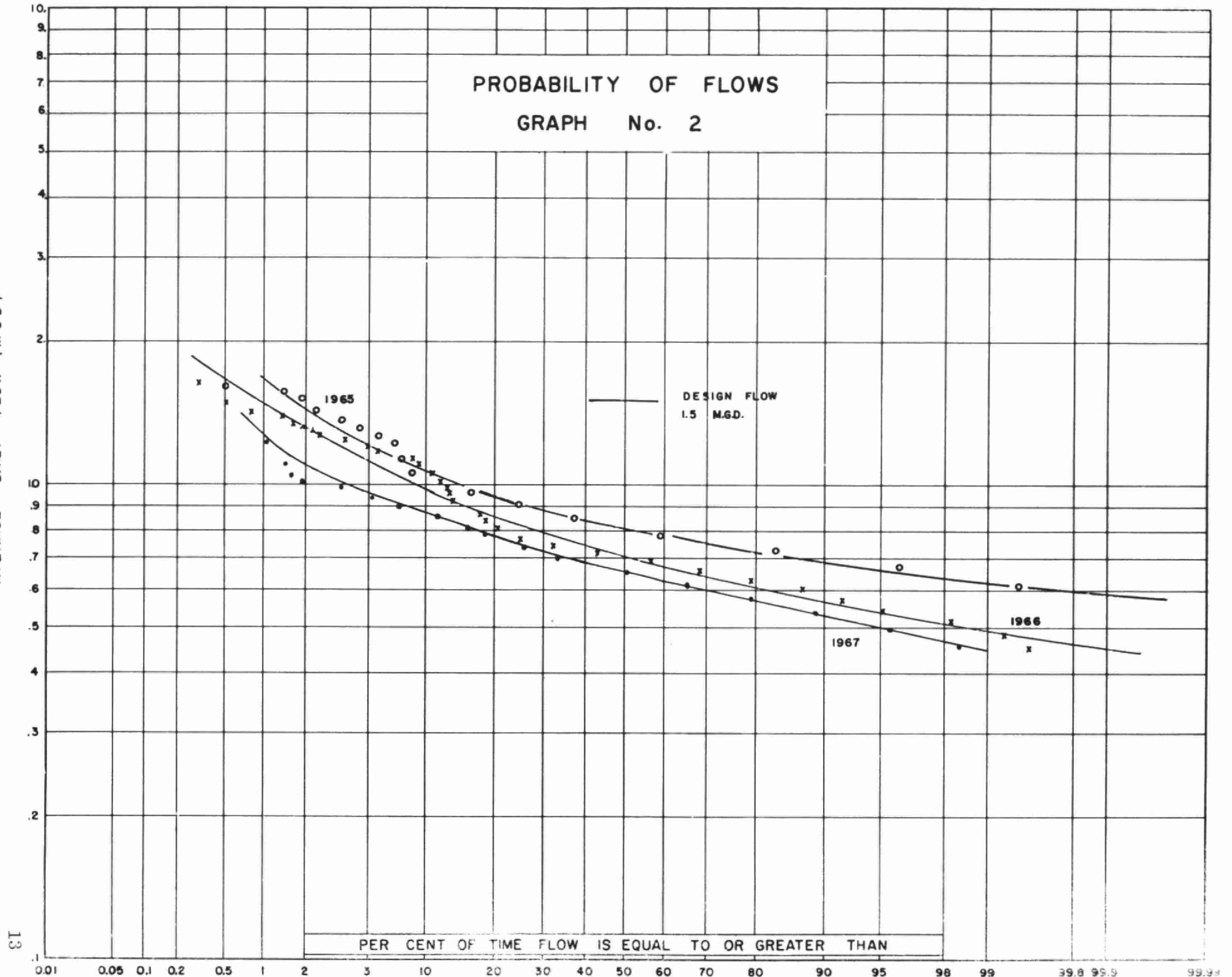
PROBABILITY OF FLOWS

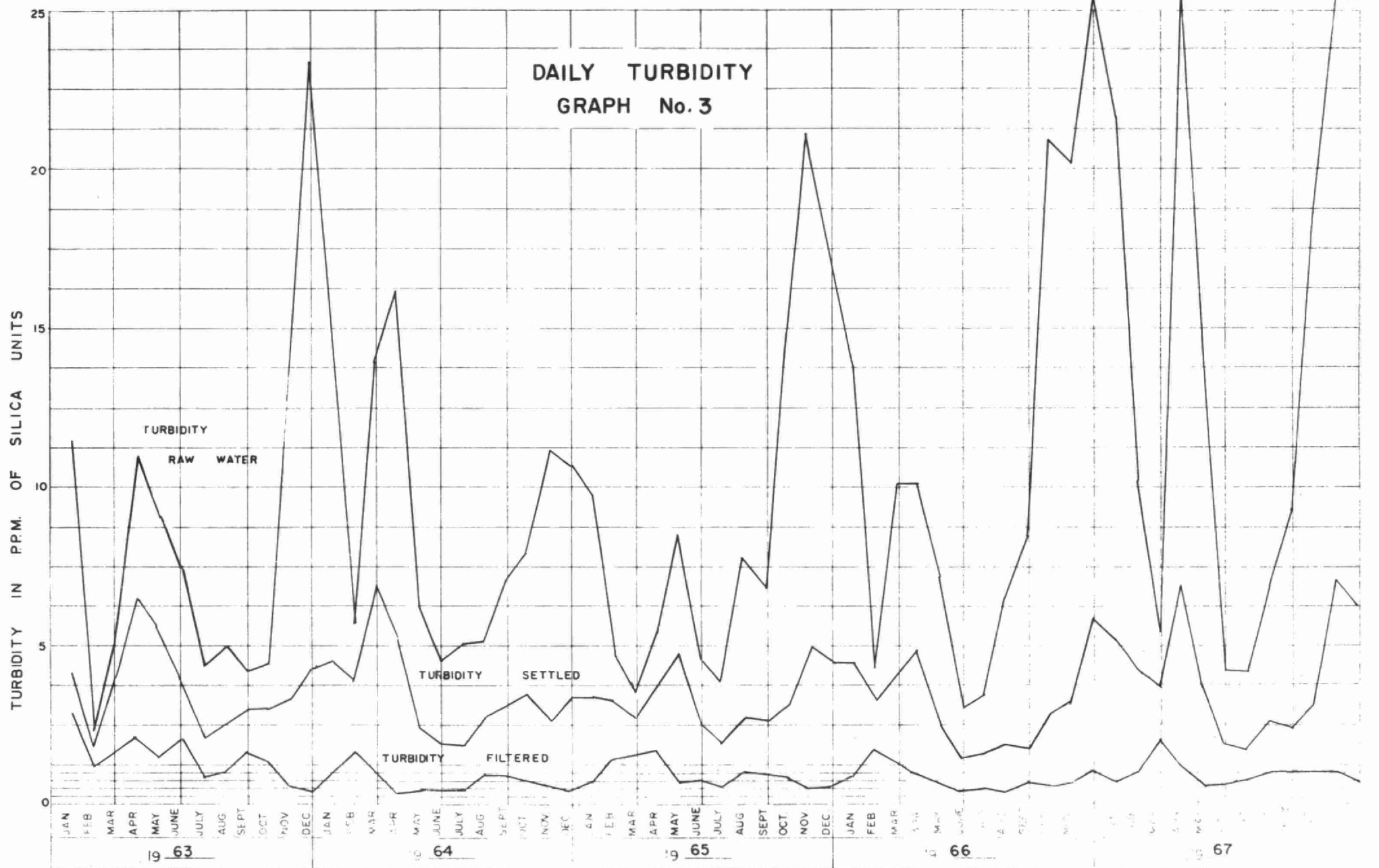
GRAPH No. 2

AVERAGE DAILY FLOW (MGD)

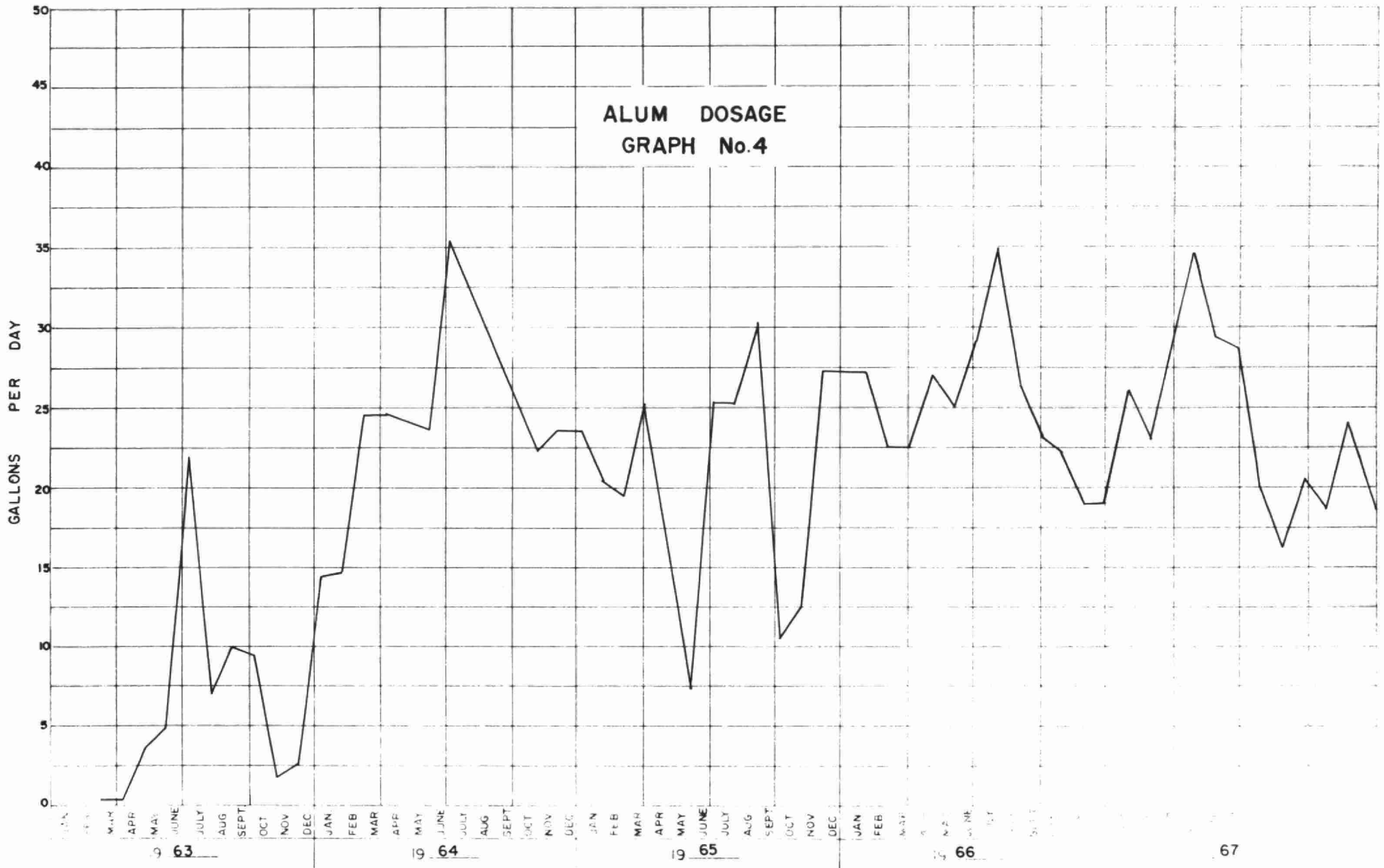
DESIGN FLOW
1.5 MGD.

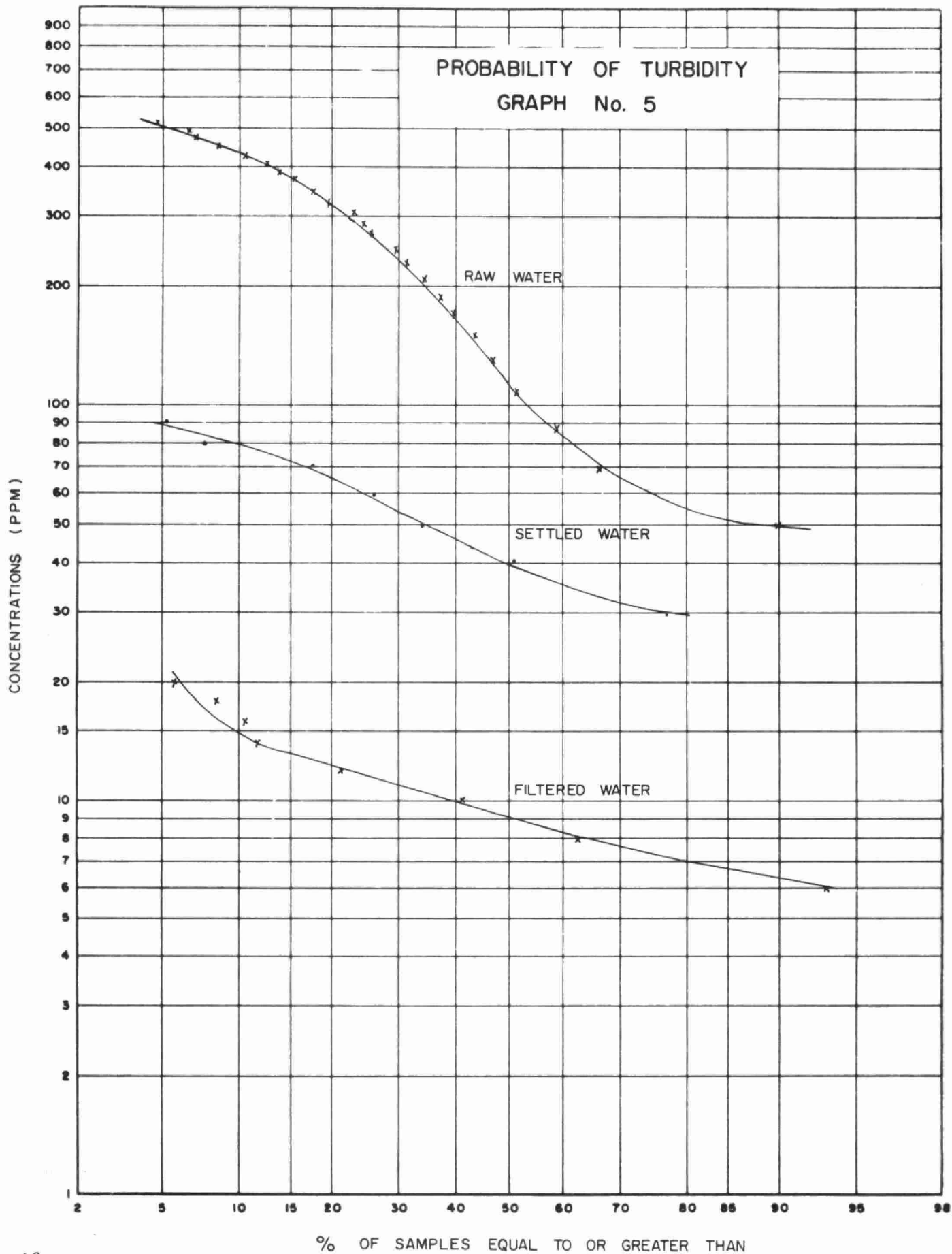
PER CENT OF TIME FLOW IS EQUAL TO OR GREATER THAN





ALUM DOSAGE
GRAPH No.4





CHLORINATION

MONTH	RAW FLOW	PRE CHLORINATION		TREATED WATER MG	POST CHLORINATION		TOTAL LBS. Chlorine
		LBS. Chlorine	Dosage Rate PPM		LBS. Chlorine	DOSAGE Rate PPM	
January	19.789	208.8	1.05	18.777	17.9	.10	226.7
February	16.689	189.0	1.13	15.838	20.8	.13	209.8
March	16.606	183.4	1.10	15.837	20.8	.13	204.2
April	16.927	270.0	1.60	16.030	27.3	.17	297.3
May	19.866	259.4	1.30	18.808	26.4	.14	285.8
June	26.712	219.9	1.31	25.159	12.0	.04	231.9
July	23.443	227.6	.97	22.026	20.8	.09	248.4
August	26.879	234.3	.91	24.612	34.6	.14	268.9
September	23.850	220.6	.92	23.010	38.1	.16	258.7
October	20.338	200.9	.99	19.638	31.7	.10	232.6
November	19.063	241.3	1.26	18.383	31.4	.17	272.7
December	17.836	179.7	1.01	17.196	20.6	.12	200.3
TOTAL	246.998	2634.9	1.07	235.314	302.4	.13	2937.3
AVERAGE	-	219.6	-	-	25.2	-	244.8

COMMENTS

Pre-chlorination of the raw water required a dosage rate of 1.07 ppm to maintain an 0.2 ppm residual throughout the treatment process. An additional post chlorination dosage of 0.12 ppm was required to maintain a residual of 0.30 ppm in the water pumped to the distribution system.

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CONCLUSIONS

The treated water quality was excellent in 1967, as it was in previous years. This year, because of decreased flows, no difficulties were encountered in supplying adequate volumes during peak demand periods. No major mechanical or electrical problems were encountered throughout the year.

DATE DUE			

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